



# Aviation Boatswain's Mate E 3 & 2

Only one answer sheet is included in the NRTC. Reproduce the required number of sheets you need or get answer sheets from your ESO or designated officer.

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## NAVEDTRA 82360-A

Prepared by the Naval Education and Training Program Management  
Support Activity, Pensacola, Florida

Congratulations! By enrolling in this course, you have demonstrated a desire to improve yourself and the Navy. Remember, however, this self-study course is only one part of the total Navy training program. Practical experience, schools, selected reading, and your desire to succeed are also necessary to successfully round out a fully meaningful training program. You have taken an important step in self-improvement. Keep up the good work.

### HOW TO COMPLETE THIS COURSE SUCCESSFULLY

**ERRATA:** If an errata comes with this course, make all indicated changes or corrections before you start any assignment. Do not change or correct the Training Manual (TRAMAN) or assignments in any other way.

**TEXTBOOK ASSIGNMENTS:** The TRAMAN for this course is Aviation Boatswain's Mate E 3&2, NAVEDTRA 12360-A.

The TRAMAN pages that you are to study are listed at the beginning of each assignment. Study these pages carefully before attempting to answer the questions in the course. Pay close attention to tables and illustrations because they contain information that will help you understand the text. Read the learning objectives provided at the beginning of each chapter or topic in the text and/or preceding each set of questions in the course. Learning objectives state what you should be able to do after studying the material. Answering the questions correctly helps you accomplish the objectives.

**BLACK DOT INFORMATION:** Black dots (●) may be used in the text and correspondence course to emphasize important or supplemental information and to highlight instructions for answering certain questions. Read these black dot entries carefully; they will help you answer the questions and understand the material.

**SELECTING YOUR ANSWERS:** After studying the TRAMAN, you should be ready to answer the questions in the assignment. Read each question carefully, then select the BEST answer. Be sure to select your answer from the subject matter in the TRAMAN. You may

refer freely to the TRAMAN and seek advice and information from others on problems that may arise in the course. However, the answers must be the result of your own work and decisions. You are prohibited from referring to or copying the answers of others and from giving answers to anyone else taking the same course. Failure to follow these rules can result in suspension from the course and disciplinary action.

**SUBMITTING COMPLETED ANSWER SHEETS:** Complete all assignments as quickly as possible to derive maximum benefit from the course. As a minimum, you must submit at least one assignment per month. This is a requirement established by the Chief of Naval Education and Training. Failure to meet this requirement could result in disenrollment from the course.

**TYPES OF ANSWER SHEETS:** If you are a U.S. Navy enlisted member on active duty or a drilling U.S. Naval Reserve enlisted member, you should use the answer sheet attached at the end of this course and follow the instructions in section A below. If you are an enlisted U.S. Naval Reserve member who is not attached to a drilling unit or if you are an officer, a civilian, or a member of the U.S. Army, Air Force, Marine Corps, or Coast Guard, you should use the Automatic Data Processing (ADP) answer sheets included in the course package and follow the instructions in section B.

### A. Manually Scored Answer Sheets

If you are a U.S. Navy enlisted member on active duty or attached to a U.S. Naval

Reserve drilling unit, your course will be administered by your local command. You must use the answer sheet designed for manual scoring, NETPMSA form 1430/5, Stock Ordering Number 0502-LP-216-0100. You may get a supply of the forms from your Educational Services Officer (ESO), or you may reproduce the one in the back of this course booklet. DO NOT USE THIS FORM FOR COURSES ADMINISTERED BY NETPMSA.

Recording Information on the Manually Scored Answer Sheets: As you complete each assignment, submit the completed answer sheet to your ESO for grading. You may submit more than one answer sheet at a time. Remember, you must submit at least one assignment each month.

Grading: Your ESO will grade each answer sheet and notify you of any incorrect answers. The passing score for each assignment is 3.2. If you receive less than 3.2 on any assignment, the ESO will list the questions you answered incorrectly and give you an answer sheet marked "RESUBMIT." You must redo the assignment and complete the RESUBMIT answer sheet. The maximum score you can receive for a resubmitted assignment is 3.2.

Course Completion: After you have submitted all the answer sheets and have earned at least 3.2 on each assignment, your command should give you credit for this course by making the appropriate entry in your service record.

Student Questions: If you have questions concerning the administration of this course, consult your ESO.

#### B. ADP Answer Sheets

If you are an enlisted U.S. Naval Reserve member who is not attached to a drilling reserve unit or if you are an officer, a civilian, or a member of the U.S. Army, Air Force, Marine Corps, or Coast Guard, use the ADP answer sheets provided in your course package. You should use one blank original ADP answer sheet for each assignment. Use only the original ADP answer sheet provided in your course package; NETPMSA will not accept reproductions.

Recording Information on the ADP Answer Sheets: Follow the "MARKING

INSTRUCTIONS" on each answer sheet. Be sure that blocks 1, 2, and 3 are filled in correctly. This information is necessary for your course to be properly processed and for you to receive credit for your work.

As you work the course, be sure to mark your answers in the course booklet because your answer sheets will not be returned to you. When you have completed an assignment, transfer your answer from the course booklet to the answer sheet.

Mailing the Completed ADP Answer Sheets: Upon completing an assignment, mail the completed answer sheet to:

COMMANDING OFFICER  
NETPMSA CODE 074  
6490 SAUFLEY FIELD RD  
PENSACOLA FL 32559-5000

Use envelopes to mail your answer sheets. You must provide your own envelopes or request them from your ESO. You may enclose more than one answer sheet in a single envelope. Remember, regardless of how many answer sheets you submit at a time, NETPMSA should receive at least one assignment a month.

NOTE: DO NOT USE THE COURSE COMMENTS PAGE AS AN ENVELOPE FOR RETURNING ANSWER SHEETS OR OTHER COURSE MATERIALS.

Grading: NETPMSA will grade the answer sheets and notify you by letter concerning your grade for each assignment, your incorrect answers and your final grade. The passing score for each assignment is 3.2. If you receive less than 3.2 on any assignment, you must rework the assignment. NETPMSA will enclose a new ADP answer sheet in the letter notifying you of the questions you answered incorrectly. You will be required to redo the assignment and resubmit the new answer sheet. The maximum score you can receive for a resubmitted assignment is 3.2.

Course Completion When you complete the last assignment, fill out the "Course Completion" form in the back of the course and enclose it with your last answer sheet. NETPMSA will issue you a letter certifying that you satisfactorily completed the course. You should make sure that

the course. You should make sure that credit for the course is recorded in your service record. YOU MAY RETAIN THE TEXT.

NOTE: YOUR OFFICIAL COURSE COMPLETION DATE WILL BE THE DATE YOUR LAST ASSIGNMENT IS PROCESSED THROUGH THE NETPMSA ADP SYSTEM--NOT THE DATE YOU DEPOSIT THE LAST ASSIGNMENT IN THE MAIL. This is especially important if you are taking the course for Naval Reserve retirement credit. You must mail your answer sheets at least 60 days before your anniversary date. This will provide you with enough time for delays in the mail or reworking failed assignments. DO NOT MAIL YOUR ASSIGNMENTS TO THE NAVAL RESERVE PERSONNEL COMMAND (NRPC).

Student Questions: Refer questions concerning this course to NETPEMSA by mail (use the address on page ii) or by telephone: DSN 922-1366 or commercial (904) 452-1366.

#### NAVAL RESERVE RETIREMENT CREDIT

If you are a member of the Naval Reserve, you will receive retirement points if you are authorized to receive them under current directives governing retirement of Naval Reserve personnel. For the purpose of Naval Reserve retirement, this edition of the course is evaluated at 6 points. These points will be credited to you upon your satisfactory completion of the entire course.

NOTE: YOUR OFFICIAL COURSE COMPLETION DATE WILL BE THE DATE YOUR LAST ASSIGNMENT IS PROCESSED THROUGH THE NETPMSA ADP SYSTEM--NOT THE DATE YOU DEPOSIT THE LAST ASSIGNMENT IN THE MAIL. Refer to the Course Completion paragraph under section B. ADP Answer Sheets.

#### COURSE OBJECTIVES

The objective of this course is to provide the Aviation Boatswain's Mate E with information on the duties and responsibilities of ABE personnel in launching and recovering aircraft; maintenance tools and equipment; description, operation, and maintenance of Mk 7 Mod 2 and 3 arresting gear; general procedures involved in the preparation, operation, and maintenance of various types of emergency recovery equipment afloat; description, operation, maintenance, and inspection of steam catapults; functions and operation of catapult associated equipment.

Naval courses may include several types of questions--multiple-choice, true-false, matching, etc. The questions are not grouped by type but by subject matter. They are presented in the same general sequence as the textbook material upon which they are based. This presentation is designed to preserve continuity of thought, permitting step-by-step development of ideas. Not all courses use all of the types of questions available. The student can readily identify the type of each question, and the action required, by inspection of the samples given below.

### MULTIPLE-CHOICE QUESTIONS

Each question contains several alternatives, one of which provides the best answer to the question. Select the best, alternative, and blacken the appropriate box on the answer sheet.

#### SAMPLE

- s-1. Who was the first person appointed Secretary of Defense under the National Security Act of 1947?

1. George Marshall
2. James Forrestal
3. Chester Nimitz
4. William Halsey

Indicate in this way on the answer sheet:

	1	2	3	4
	T	F		
s-1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> _ _ _

### TRUE-FALSE QUESTIONS

Mark each statement true or false as indicated below. If any part of the statement is false the statement is to be considered false. Make the decision, and blacken the appropriate box on the answer sheet.

#### SAMPLE

- s-2. All naval officers are authorized to correspond officially with any systems command of the Department of the Navy without their respective commanding officer's endorsement.

1. True
2. False

Indicate in this way on the answer sheet:

	1	2	3	4
	T	F		
s-2	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> _ _ _

### MATCHING QUESTIONS

Each set of questions consists of two columns, each listing words, phrases or sentences. The task is to select the item in column B which is the best match for the item in column A that is being considered. Items in column B may be used once, more than once, or not at all. Specific instructions are given with each set of questions. Select the numbers identifying the answers and blacken the appropriate boxes on the answer sheet.

#### SAMPLE

In questions s-3 through s-6, match the name of the shipboard officer in column A by selecting from column B the name of the department in which the officer functions. Some responses may be used once, more than once, or not at all.

#### A. OFFICER

#### B. DEPARTMENT

- |      |                          |                           |
|------|--------------------------|---------------------------|
| s-3. | Damage Control Assistant | 1. Operations Department  |
| s-4. | CIC Officer              | 2. Engineering Department |
| s-5. | Disbursing Officer       | 3. Supply Department      |
| s-6. | Communications Officer   |                           |

Indicate in this way on the answer sheet:

	1	2	3	4
	T	F		
s-3	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> _ _ _
s-4	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> _ _ _
s-5	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/> _ _ _
s-6	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> _ _ _

# ASSIGNMENT 1

Textbook Assignment: "Common Maintenance Tools and Their Uses," and "Measuring Tools and Techniques"; chapters 1 and 2, pages 1-1 through 2-12.

1-1. You demonstrate good work habits by doing which of the following tasks?

1. Stowing tools in their proper place
2. Using handtools for their intended purposes only
3. Protecting tools against damage, breakage, and rust
4. All of the above

1-2. Ball-peen machinist's hammers are made in different weights. They are also divided into hard-faced and soft-faced classifications.

1. True
2. False

1-3. Which of the following tools is most suitable for driving a tight fitting shaft into its hole?

1. A hard-faced hammer
2. A soft-faced hammer
3. A carpenter's hammer
4. A sledge hammer

1-4. Which of the following statements best describes the effect of choking up on a hammer handle?

1. It increases the lever arm
2. It reduces the striking force of the blow
3. It produces a more effective blow
4. It makes it easier to hold the hammer upright

IN ANSWERING QUESTIONS 1-5 THROUGH 1-8, SELECT FROM COLUMN B THE NAME OF THE HAMMER SHOWN IN COLUMN A.

## A. HAMMERS

## B. NAMES

1-5.



1. Claw

2. Ball peen

3. Cross peen

4. Riveting

1-6.



1-7.



1-8.



1-9. Which of the following is a recommended practice in the use and care of a rawhide mallet?

1. It may be used to drive nails or strike steel surfaces
2. The rawhide may be conditioned by exposure to sunlight
3. The handle may be used for prying
4. A thin coat of oil should be applied to the head before storage

1-10. What characteristic determines the size of an open-end wrench?

1. The overall length of the wrench
2. The width of the opening between the wrench jaws
3. The thickness of the wrench jaws
4. The minimum amount of "play" between the jaws

- 1-11. Which of the following wrenches is best suited for breaking a nut loose and then unscrewing it quickly?
1. An open-end "5" wrench
  2. A 15-degree offset open-end wrench
  3. A box-end wrench
  4. A combination box open-end wrench
- 1-12. The most frequently used box-end wrench has how many "points" or notches that contact the nut or bolt to be loosened or tightened?
1. 6
  2. 8
  3. 10
  4. 12
- 1-13. A box-end wrench with a 15-degree offset has what advantage, if any, over a straight-handle box-end wrench?
1. The offset allows more handle swing
  2. Increased leverage
  3. The offset allows clearance over nearby parts
  4. None

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IN ANSWERING QUESTIONS 1-14 THROUGH 1-16, SELECT FROM COLUMN B THE SOCKET HANDLE THAT IS BEST SUITED FOR THE TASK IN COLUMN A.

	<u>A. TASKS</u>	<u>B. HANDLES</u>
1-14.	Rapidly tightening or loosening nuts or bolts, using a series of partial turns	1. Speed handle 2. T-handle
1-15.	Removing nuts or bolts that have been loosened first with another wrench	3. Hinged handle 4. Ratchet handle
1-16.	Applying the most leverage to break loose tight nuts, then using the same handle to remove them rapidly	

- 1-17. When you are using a micrometer setting type torque wrench, how is the amount of torque applied indicated?
1. By pointer or needle movement
  2. The socket slips for a short distance
  3. An audible click and free movement of the handle for a short distance
  4. The user depends on a sense of touch or "feel" acquired through experience
- 1-18. What advantage is there to using an adjustable wrench instead of a box-end wrench to tighten or loosen a nut?
1. An adjustable wrench can be made to fit odd-sized nuts or bolts
  2. An adjustable wrench cannot damage hard to turn nuts
  3. An adjustable wrench is less likely to be used improperly
  4. Either jaw of an adjustable wrench may be adjusted to fit any size or shape nut or bolt
- 1-19. How should you guide straight hand tin snips when cutting light sheet metal, in relation to the layout line?
1. Guide snips on the inside of the line
  2. Guide snips on the outside of the line
  3. Guide snips directly on the line
  4. Guide snips either directly on the line or just inside of it
- 1-20. How are the teeth arranged on a double alternate set hacksaw blade?
1. They are arranged in short sections on each side of the blade
  2. They are arranged so that every third tooth is in line with the blade
  3. They are staggered in pairs, two to the left and two to the right
  4. They are staggered, one to the left and one to the right
- 1-21. What term denotes the groove cut through the head of a cap screw or machine bolt?
1. Guide
  2. Step
  3. Kerf
  4. Set



IN ANSWERING QUESTIONS 1-22 THROUGH 1-27, SELECT FROM COLUMN B THE PROPER CHISEL TO BE USED FOR THE JOB IN COLUMN A. CHOICES IN COLUMN B MAY BE USED MORE THAN ONCE.

<u>A. JOBS</u>		<u>B. CHISELS</u>
1-22.	Cutting keyways	1. Cape
1-23.	Chipping inside corners	2. Round nose
1-24.	Cutting V-grooves	3. Diamond point
1-25.	Cutting rivets	4. Flat
1-26.	Cutting thin metal	
1-27.	Cutting a square corner	
<hr/>		
1-28.	Which of the following items should you wear when chipping metal with a chisel?	
	1. Canvas gloves	
	2. A shop apron	
	3. Safety goggles	
	4. Rubber gloves	
1-29.	At what angle are the teeth of a single-cut file set?	
	1. 40°	
	2. 65°	
	3. 75°	
	4. 90°	
1-30.	Alternate-position crossfiling is best suited to perform which of the following operations?	
	1. Filing round stock	
	2. Polishing a flat surface	
	3. Locating high and low spots	
	4. Roughing a smooth surface	
1-31.	Rubbing chalk into the teeth of a file is the best method used to prevent "pinning" of the file.	
	1. True	
	2. False	
1-32.	When polishing a metal surface with emery cloth, what substance should you apply to the surface?	
	1. Chalk dust	
	2. Bright work polish	
	3. Prussian blue	
	4. Lubricating oil	

- 1-33. What are the spiral grooves of a twist drill called?
1. The body
  2. The flute
  3. The shank
  4. The margin
- 1-34. What is the function of the lip on a twist drill?
1. To cut away the metal or wood being drilled
  2. To allow the twist drill to revolve without binding
  3. To center the twist drill
  4. To provide shank clearance
- 1-35. A center punch is used primarily to perform which of the following tasks?
1. To mark the center of a hole to be drilled
  2. To line up holes in mating assembly parts
  3. To free pins that are stuck or "frozen" in their holes
  4. To scribe layout lines
- 1-36. You have marked the intersection of two layout lines with a prick punch, but the punch mark is not at the exact center. How should you now center the punch mark?
1. Draw a new layout
  2. Select a new center point in the layout
  3. Make a second punch mark opposite of the first mark
  4. Slant the punch toward the intersection of the lines and enlarge the punch mark
- 1-37. Taps are used to cut internal threads, and dies are used to cut external threads in metal, plastics, and hard rubber.
1. True
  2. False
- 1-38. What sequence of taps should be used to tap a blind hole?
1. Plug, taper, bottoming
  2. Taper, bottoming, plug
  3. Plug, bottoming, taper
  4. Taper, plug, bottoming
- 1-39. A chamfer length of only 1 to 1 1/2 threads is found on what type of tap?
1. Taper
  2. Bottoming
  3. Plug
  4. Pipe

How should you make adjustments to a two-piece-collet die:

1. Turn the collet cap
2. Push a release button
3. Turn setscrews
4. Turn the guide

What is the cutting capacity of a number 2 pipe cutter?

1. 1 to 2 in.
- 1 1/2 to 3 in.
3. 2 to 3 in.
4. 2 to 4 in.

The single flaring tool is used to flare tubing ranging in what sizes?

1. 3/16 through 3/8 in. only
2. 3/16 through 1/2 in.
3. 1/4 through 7/16 in. only
4. 1/4 through 1/2 in.

1-43. Standard screwdrivers are classified by size according to the combined length of which of their following parts?

1. Shank and blade only
2. Handle and shank only
3. Handle and blade only
4. Handle, shank, and blade

1-44. How are combination slip-joint pliers distinguished from regular slip-joint pliers?

1. They have an adjustable pivot at the jaws
2. They are able to hold objects regardless of their shape
3. They have a side cutter at the junction of the jaws
4. They have dual joints allowing a larger range of adjustment

1-45. Which type of pliers may be used as a clamp or vice?

1. Slip-joint pliers
2. Water pump pliers
3. Wrench pliers
4. Groove-joint pliers

1-46. Of the following operations, which one is best accomplished by using diagonal pliers?

1. Grasping cylindrical objects
2. Bending light gauge materials
3. Cutting small objects flush with the surface
4. Straightening bent cotter pins

1-47. What type of file should be used to sharpen the serrations on the jaws of pliers?

1. A dead smooth file
2. A single cut flat file
3. A small triangular file
4. A small tapered square file

1-48. What is the maximum allowable length of an electric extension cord used on the flight deck?

1. 25 ft
2. 50 ft
3. 75 ft
4. 100 ft

1-49. Which of the following pneumatic tools is best suited for use in scaling an irregular surface?

1. Rotary scaler
2. Needle scaler
3. Shale scaler
4. Jitterbug scaler

1-50. Generally, pneumatic impact wrenches operate most efficiently when the air supplied is in what pressure range?

1. 50 to 90 psi
2. 80 to 90 psi
3. 80 to 120 psi
4. 100 to 120 psi

1-51. The term "blueprint reading" is best defined by which of the following statements?

1. The reading aloud of the printed matter in the legends
2. The reading of related matter to help you understand the blueprint symbols
3. The interpretation of the ideas expressed on drawings
4. The interpretation of your ideas compared to the ideas expressed on the drawing

1-52. In what corner of a blueprint is the revision block usually found?

1. Lower left
2. Lower right
3. Upper left
4. Upper right

1-53. Of the following types of blueprints, which one would show the various parts of a machine and how the parts fit together?

1. Detail print
2. Plan view
3. Assembly print
4. Unit print

- 1-54. How should a 12-inch steel rule be held to obtain an accurate measurement of a surface?
1. At a slight angle to the surface
  2. With the edge at a slight distance from the surface
  3. Flat along the surface
  4. With the edge along the surface

- 1-55. What is the most practical means of measuring the outside diameter of a pipe?

1. Trace the circumference of the pipe on a piece of paper and measure across the tracing
2. Stop one end of a rule at the pipe edge, swing the rule, and read the maximum measure
3. Stop one end of the rule at the pipe edge, swing the rule, and read the minimum measure
4. Wrap a flexible rule around the pipe

- 1-56. Which of the following measuring tools is best used to measure the inside of a box frame or foot locker?

1. A folding rule with a sliding extension
2. A carpenter's square
3. An inside caliper
4. A flexible tape rule

- 1-57. Which of the following tools should you use to take a measurement over a long distance?

1. A folding rule
2. A folding rule with sliding extension
3. A hook rule
4. A fiberglass tape rule

- 1-58. Which type of inside calipers should be used to measure a chamfered cavity?

1. Transfer firm joint
2. Adjustable firm joint
3. Spring
4. Hermaphrodite

- 1-59. Which type of calipers should be used to locate the center of a shaft?

1. Transfer
2. Hermaphrodite
3. Inside
4. Outside

- 1-60. Which of the following calipers may be used to make inside and outside measurements?

1. Combination firm joint
2. Solid-joint
3. Spring
4. Adjustable firm joint

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IN ANSWERING QUESTIONS 1-61 THROUGH 1-64, SELECT FROM COLUMN B THE TYPE OF MICROMETER FOR MEASURING THE DIMENSION IN COLUMN A.

	A. DIMENSIONS	B. TYPES OF MICROMETERS
1-61.	Piston travel in a cylinder	1. Inside
1-62.	Diameter of a solid round bar	2. Outside
1-63.	Pitch diameter of a screw	3. Depth
1-64.	Bore of a cylinder	4. Screw thread

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- 1-65. Each of the 25 marks on the thimble of the standard outside micrometer represents what part of an inch?

1. 0.001 in.
2. 0.005 in.
3. 0.025 in.
4. 0.040 in.

- 1-66. What characteristic of a micrometer determines its range?

1. The length of its frame
2. The distance that the spindle can travel
3. The distance that the spindle travels with each revolution of the thimble
4. The length of the work it will measure

## ASSIGNMENT 2

Textbook Assignment: "Mark 7 Aircraft Recovery Equipment and Barricade Systems"; chapter 3, pages 3-1 through 3-68.

- 
- |   |   |
|---|---|
| <p>2-1. The Mk 7 recovery equipment is divided into a total of how many major systems?</p> <ol style="list-style-type: none"><li>1. Five</li><li>2. Two</li><li>3. Three</li><li>4. Four</li></ol> <p>2-2. What is the purpose of the Mk 7 arresting engine constant runout control (CRO) valve?</p> <ol style="list-style-type: none"><li>1. To control fluid flow from the engine cylinder to the accumulator</li><li>2. To control the hydraulic pressure maintained in the accumulator</li><li>3. To reduce peak tension on the purchase cables during arrestment</li><li>4. To allow equal payout of both ends of the deck pendant</li></ol> <p>2-3. The aircraft weight selector is adjusted while the arresting engine is in the battery position. This adjustment causes a change in the position of what component of the CRO valve?</p> <ol style="list-style-type: none"><li>1. The cam</li><li>2. The plunger</li><li>3. The upper lever</li><li>4. The lower lever</li></ol> <p>2-4. Which of the following statements is correct concerning the valve sleeve and stem movement of the CRO valve?</p> <ol style="list-style-type: none"><li>1. At a 1:1 ratio, the sleeve and stem move 1/4 in.</li><li>2. At a 1:1 ratio, the sleeve and stem move 1/2 in.</li><li>3. At a 4:1 ratio, the sleeve and stem move 1/2 in.</li><li>4. At a 4:1 ratio, the sleeve and stem move 1/4 in.</li></ol> <p>2-5. What controls the variation in the size of the opening of the CRO valve?</p> <ol style="list-style-type: none"><li>1. The drive system</li><li>2. The aircraft weight selector setting</li><li>3. The cam rotation</li><li>4. The plunger movement</li></ol> | <p>2-6. What is the function of the CRO valve weight selector indicator circuit?</p> <ol style="list-style-type: none"><li>1. To enable the synchro system to give a remote indication of the aircraft weight setting</li><li>2. To energize the circuit enabling the PRI-FLY operator to make remote weight settings from his station in PRI-FLY</li><li>3. To energize the circuit enabling the arresting gear officer to give a "clear deck" signal in the landing area</li><li>4. To complete the circuit enabling the LSO talker to energize the Heads Up Display (HUD)</li></ol> <p>2-7. What is the purpose of the four vertical elongated holes machined into the retract valve seat?</p> <ol style="list-style-type: none"><li>1. To allow fluid to pass through the valve from the main engine cylinder</li><li>2. To allow fluid to pass through the valve from the accumulator</li><li>3. To allow fluid to pass through the valve from the anchor dampers</li><li>4. To minimize the weight of the valve</li></ol> <p>2-8. Which of the following statements best describes the action of the return spring of the retract valve retraction lever?</p> <ol style="list-style-type: none"><li>1. The spring pulls up on the retract lever, which in turn pulls down on the plunger and valve stem</li><li>2. The spring pulls up on the retract lever, which in turn pulls up on the plunger and valve stem</li><li>3. The spring pulls down on the retract lever, which in turn pulls down on the plunger and valve stem</li><li>4. The spring pulls down on the retract lever, which in turn pulls up on the plunger and valve stem</li></ol> |
|---|---|

- 2-9. What device is installed on the retract valve operating lever to eliminate chatter?
1. A return spring and tie rod
  2. A plunger
  3. A shock absorber
  4. A 6-inch-square neoprene impact pad
- 2-10. The Mk 7 Mod 2 and the Mk 7 Mod 3 arresting engines have what is described as a recirculating type hydraulic system.
1. True
  2. False
- 2-11. What position must the arresting engine crosshead be in when you check the engine accumulator fluid level?
1. Drain
  2. Fill
  3. off
  4. Battery
- 2-12. The accumulator fluid indicator will indicate what reading, if any, if the piston striker rod is NOT in contact with the actuator rod?
1. Drain
  2. Fill
  3. Battery
  4. None; no reading will be indicated
- 2-13. What is the purpose of the fluid replenishment system?
1. To replace or remove small amounts of fluid in the hydraulic system
  2. To replace large amounts of fluid lost due to leakage
  3. To provide a means of hydraulically setting the CRO valve
  4. To allow adjustment of the battery position of the crosshead
- 2-14. Which of the following statements regarding the fluid stowage system is INCORRECT?
1. Each arresting engine has its own stowage tank
  2. The tank is common to all arresting engines
  3. The tank can stow all the fluid from one arresting engine
  4. The capacity of the tank varies depending on the engine modification
- 2-15. What devices prevent corrosion of the cooling tubes in the fluid cooler?
1. Copper baffles
  2. Replaceable anodes
  3. Replaceable cathodes
  4. Rust inhibitors
- 2-16. Which components make up the actual engine of the arresting gear?
1. The crosshead and ram assembly
  2. The CRO valve and drive system
  3. The CRO valve, cylinder, and fixed end
  4. The cylinder and ram assembly
- 2-17. The outer end of the ram is attached to the crosshead by what device(s)?
1. A snap ring
  2. A bearing sleeve and retainer
  3. A split flange
  4. Pressure clamps
- 2-18. Which of the following parts enable lubricant to be retained in the cage and roller bearing assemblies of the crosshead sheaves and the sheaves of the fixed sheave installation?
1. Leather spacers
  2. Phenolic spacers
  3. Steel spacers
  4. Inner steel disc spacers
- 2-19. What purpose do the crosshead mounted slippers serve during arresting engine operation?
1. They absorb shock
  2. They support the crosshead
  3. They guide the crosshead
  4. They act as a bearing surface
- 2-20. What is the operating pressure of the automatic lubrication system?
1. 70 to 80 psi
  2. 75 to 85 psi
  3. 60 to 70 psi
  4. 40 to 50 psi
- 2-21. What is the proper amount of spring tension to be maintained on the hose reel of the automatic lubrication system?
1. 20 lb  $\pm$  1/2 lb
  2. 14 lb  $\pm$  1 lb
  3. 9 lb  $\pm$  1/2 lb
  4. 5 lb  $\pm$  1 lb

- 2-22. What is the function of the cable anchor damper?
1. To reduce vibration in the cable system by eliminating cable slack between the crosshead and fixed sheave assembly during retraction
  2. To reduce vibration in the purchase cable system by eliminating cable slack between the crosshead and fixed sheave assembly during an arrestment
  3. To provide a means of anchoring the purchase cable in the engine room
  4. To indicate that the arresting engine has returned to the battery position after arrestment
- 2-23. What source provides the energy for the battery positioner to operate?
1. Hydraulics
  2. Electricity
  3. Pneumatics
  4. Electrohydraulics
- 2-24. Which of the following is NOT a part of the sheave damper assembly?
1. The anchor assembly
  2. The buffer assembly
  3. The charging panel
  4. The damper piston
- 2-25. What is the purpose of the sheave damper flow control valve?
1. To allow free flow of fluid from the damper cylinder to the damper accumulator and a restricted flow from the damper accumulator to the damper cylinder
  2. To allow restricted flow of fluid from the damper cylinder to the damper accumulator and free flow from the damper accumulator to the damper cylinder
  3. To allow free flow of fluid to and from the damper accumulator only
  4. To allow free flow of fluid from the damper cylinder to the accumulator only
- 2-26. What is the primary function of the purchase cables?
1. To transmit the landing aircraft's force to the arresting engine
  2. To tension the crossdeck pendant
  3. To drive the control systems of the arresting engine
  4. To retract the crossdeck pendant
- 2-27. If the purchase cable payout is 72 feet, the engine ram will travel a total of how many feet?
1. 5
  2. 2
  3. 3
  4. 4
- 2-28. What two methods can be used to operate the retractable deck sheaves?
1. Hydraulically and manually
  2. Pneumatically and manually
  3. Electrically and manually
  4. Hydraulically and pneumatically
- 2-29. The adjustable torque limit switch is actuated by which of the following components?
1. The worm
  2. The tripping plate washer
  3. The torque spring
  4. The wormshaft
- 2-30. What is the only function of the retractable deck sheave limit bevel gear?
1. To transmit the motor force to the wormshaft
  2. To engage the lugs of the clutch bevel gear
  3. To rotate the sleeve
  4. To turn the pinion of the geared limit switch
- 2-31. Who may make adjustments to the retractable deck sheave geared limit switch?
1. Anyone from E division
  2. The work-center supervisor only
  3. A qualified electrician only
  4. Anyone from the QA branch
- 2-32. The crossdeck pendant cable ends are equipped with what type of terminals?
1. Swaged
  2. Poured basket
  3. Fiege
  4. Clamp

- 2-33. Wire supports are designed to maintain a crossdeck pendant height of 2 inches minimum. The maximum height should be measured between what two points?
1. From the top of the pendant to the deck at the pendant's highest point
  2. From the top of the pendant to the deck at the pendant's lowest point
  3. From the bottom of the pendant to the deck at the pendant's highest point
  4. From the bottom of the pendant to the deck at the pendant's lowest point
- 2-34. Which of the following components is/are NOT found in a barricade arresting engine installation?
1. Crossdeck pendant
  2. Sheave dampers
  3. Retractable sheaves
  4. Fluid cooler
- 2-35. The polyurethane semicoated barricade webbing assembly consists of a total of how many separate webbing systems?
1. Five
  2. Six
  3. Three
  4. Four

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IN ANSWERING QUESTIONS 2-36 THROUGH 2-38, SELECT FROM COLUMN B THE BARRICADE EQUIPMENT THAT PERFORMS THE FUNCTION LISTED IN COLUMN A.

	<u>A. FUNCTIONS</u>	<u>B. EQUIPMENT</u>
2-36.	Cushions the stanchion's fall against the deck	1. Stanchion hydraulic cylinder
2-37.	Raises and lowers the barricade stanchions	2. Counter-balancing springs
2-38.	Secures stanchions in the DOWN position	3. Tensioning pendants 4. Stanchion
2-39.	What is the approximate fluid capacity of the barricade power package gravity tank?	
	1. 75 gal	
	2. 100 gal	
	3. 150 gal	
	4. 200 gal	

- 2-40. Which parts of the barricade power package hydraulic control system operate in conjunction to maintain accumulator pressure within specified limits?
1. Air charging valve and motor controller
  2. Motor controller and gauge valve
  3. Pressure sensing switch and motor controller
  4. Pressure sensing switch and air charging valve
- 2-41. At what approximate pressure will the safety head in the power package accumulator rupture?
1. 1,500 psi
  2. 1,600 psi
  3. 1,750 psi
  4. 2,000 psi
- 2-42. Of the two broad maintenance categories, corrective maintenance is preferred over preventive maintenance.
1. True
  2. False
- 2-43. Newly installed hydraulic seals should be pressure tested for at least how long before recovery operations are resumed?
1. 90 min
  2. 60 min
  3. 45 min
  4. 30 min
- 2-44. Why is the arresting gear maintenance log considered the most important record kept on the arresting gear equipment?
1. It contains recovery log information
  2. It contains the names of maintenance personnel
  3. It contains wire rope history report information
  4. It contains most of the information needed to complete other reports and records
- 2-45. When must newly installed purchase cables be detorqued?
1. Between the first 50 to 60 landings and every 200 thereafter
  2. After the first 60 landings and every 300 thereafter
  3. Before 50 landings are reached and every 150 thereafter
  4. At the discretion of the maintenance officer

- 2-46. What condition will result from the stretching of newly installed purchase cables?
1. It causes the crosshead to move away from the crosshead stop, increasing the fluid capacity of the hydraulic system
  2. It causes the crosshead to move away from the crosshead stop, decreasing the fluid capacity of the hydraulic system
  3. It causes the crosshead to move toward the crosshead stop, increasing the fluid capacity of the hydraulic system
  4. It causes the crosshead to move toward the crosshead stop, decreasing the fluid capacity of the hydraulic system
- 2-47. After the wire rope has been cut, what is the next step in preparing it for terminal pouring?
1. Clean the end with chlorinated decreasing solvents
  2. Straighten the strands
  3. Remove the seizing from the cut end
  4. Remove the appropriate amount of the hemp center
- 2-48. What solvent is used to degrease and clean the broomed out end of the wire rope?
1. GRISOLVE MT-N
  2. ZINC CHLORIDE
  3. TRICHLOROETHANE
  4. AMMONIUM CHLORIDE
- 2-49. The grit blast cabinet used for etching the wire rope cables and terminals should be filled with how much grit prior to use?
1. 100 lb maximum
  2. 100 to 200 lb
  3. 200 lb minimum
  4. 200 to 250 lb
- 2-50. In terminal pouring, when, if ever, must the solution in the ultrasonic degreaser and the rinsing solution be replaced?
1. Replace both solutions after 10 terminals have been degreased and rinsed
  2. Replace the solutions only when they become dirty
  3. Replace the decreasing solution after 10 terminals have been degreased; no limit on the rinse solution
  4. Never; strain both solutions through 100 micron screen after each use and they may be used indefinitely
- 2-51. The flux solution used in terminal pouring should be heated to what temperature range?
1. 550 to 600°F
  2. 460 to 510°F
  3. 250 to 280°F
  4. 160 to 210°F
- 2-52. To calibrate the portable pyrometer, the zinc freeze point must be within what temperature range?
1. 950 to 1000°F
  2. 500 to 550°F
  3. 550 to 600°F
  4. 778 to 798°F
- 2-53. Before the molten zinc is poured into a terminal, the terminal must be heated to what temperature range?
1. 500 to 550°F
  2. 550 to 600°F
  3. 778 to 798°F
  4. 950 to 1000°F
- 2-54. When repacking a component, how much clearance should be maintained to allow the packing freedom of movement?
1. 5/32 to 8/32 in.
  2. 3/32 to 5/32 in.
  3. 3/64 to 3/8 in.
  4. 1/64 to 3/64 in.
- 2-55. The proper procedure used to proofload a poured terminal is to gradually increase the test pressure to 200,000 pounds, hold the pressure for 2 minutes, and then gradually bleed down the pressure.
1. True
  2. False



2-56. What hazardous condition may be caused by entrapped air in the arresting engine cylinder?

1. Two-blocking
2. Fast cable retraction
3. Walkback
4. Short runout

2-57. Of the following conditions, which one is considered extremely critical?

1. One broken wire in a crossdeck pendant
2. Debris near a deck winch
3. Sheaves slipping on races
4. Terminals jamming sheaves

2-58. Improper CRO valve cam alignment will cause which of the following conditions?

1. The actual setting of the valve will be different from that indicated by the weight selector
2. Main engine cylinder pressure will increase above 650 psi during arrestment
3. An accumulator pressure will be lower than its initial charging pressure
4. The CRO valve will always fully close prior to the aircraft's desired full runout

# ASSIGNMENT 3

Textbook Assignment: "Steam Catapults"; chapter 4, pages 4-1 through 4-76.

- 3-1. What are the most significant differences among the various types of steam catapults?
1. Power strokes and lengths
  2. Endspeeds and power strokes
  3. Endspeeds and launching capacities
  4. Lengths and launching capacities

IN ANSWERING QUESTIONS 3-2 THROUGH 3-4, SELECT FROM COLUMN B THE SYSTEM THAT CONTAINS THE COMPONENTS LISTED IN COLUMN A.

	<u>A. COMPONENTS</u>	<u>B. SYSTEMS</u>
3-2.	Launching valve assemblies	1. Steam system
3-3.	Injector nozzles	2. Launching system
3-4.	Digital endspeed indicator magnetic sensors	3. Drive system
		4. Lubrication system

- 3-5. What determines the number of launching cylinders that are mounted in the catapult trough?
1. Type and overall length of the catapult
  2. Required amount of elongation for the type of catapult
  3. Number of base pads in the trough
  4. Number of lubricator nozzles required for the type of catapult

- 3-6. What function is provided by the cylinder covers of the launching engine?
1. Eliminates the need for external bracing of the trough covers and track assembly
  2. Prevents steam from escaping through the cylinder slots during the power stroke
  3. Prevents steam pressure from spreading the cylinder in the area of the cylinder slot
  4. provides a means of connecting the shuttle to the piston assemblies

- 3-7. What prevents the loss of steam from behind the steam piston assemblies during the catapult's power stroke?

1. Sealing strips
2. Piston rings
3. The piston barrel
4. Bushings

- 3-8. What force maintains the tension on the catapult launching engine cylinder sealing strip?

1. Hydraulic pressure
2. Spring tension
3. Steam pressure
4. Air pressure

- 3-9. What component serves as the chassis for the other components of the steam piston assembly?

1. The spear
2. The barrel
3. The connector
4. The support guide

- 3-10. What component serves as a bearing surface for the piston assembly?

1. The rubbing strip
2. The barrel
3. The piston guide
4. The strip guide

- 3-11. A total of how many rollers are mounted on the shuttle frame?

1. Six
2. Two
3. Eight
4. Four

- 3-12. What component of the water brake cylinder installation forms the vortex at the open end of the water brake cylinder?

1. The jet ring
2. The striker ring
3. The annulus ring
4. The choke ring

- 3-13. The term "elbow pressure" refers to what specific pressure?

1. The basket strainer inlet pressure
2. The basket strainer outlet pressure
3. The water pressure entering the water brake cylinder
4. The pump discharge pressure

- 3-14. Which of the following information is NOT displayed on the Digital Endspeer Indicator (DESI)?
1. Time of day
  2. CSV setting
  3. Shuttle endspeer
  4. Catapult number
- 3-15. All catapult trough covers are designed to withstand what total amount of vertical rolling shuttle load?
1. 100,000 lb
  2. 132,000 lb
  3. 200,000 lb
  4. 264,000 lb
- 3-16. What switch or valve controls the flow of steam from the ship's boilers to the catapult's dry-steam receivers or wet-steam accumulator?
1. The steam launching valves
  2. The capacity selector valve
  3. The steam fill valves
  4. The steam pressure cutoff switch
- 3-17. How far must the rotary launch valve control assembly crosshead travel to stop the number 2 launch valve stroke timer clock?
1. 3 1/2 in.
  2. 6 in.
  3. 9 in.
  4. 11 1/2 in.
- 3-18. What device controls the opening rate of the launch valves to allow the launching of various types and weights of aircraft?
1. The launch valve control valve
  2. The capacity selector valve
  3. The launch valve stroke timers
  4. The steam pressure cutoff switch
- 3-19. What mechanism prevents a steam buildup behind the launching engine steam pistons until the catapult is fired?
1. The exhaust valve
  2. The pressure-breaking orifice elbow
  3. The exhaust valve keeper valve
  4. The wet-steam accumulator
- 3-20. What force causes the launch pilot latch solenoid to shift when the catapult FIRE circuit is energized?
1. Air pressure
  2. Hydraulic pressure
  3. Mechanical force
  4. Electrical energy
- 3-21. The exhaust valve hydraulic lock valve controls the flow of fluid to which of the following components?
1. The steam pressure cutoff switch
  2. The pressure breaking elbow
  3. The exhaust valve limit switch
  4. The exhaust valve hydraulic actuator
- 3-22. The contacts of the steam cutoff pressure switches close when the steam pressure in the launching engine cylinders reaches what pressure?
1. 10 psi
  2. 20 psi
  3. 30 psi
  4. 40 psi
- 3-23. What is the function of both the linear and rotary retraction engines?
1. To control the movement of the grab only
  2. To retract the launching engine steam pistons only
  3. To maneuver the shuttle forward and aft only
  4. To maneuver the shuttle forward and aft when slow movement is required by controlling the movement of the grab
- 3-24. The retraction engine drive system cables are attached to what component(s)?
1. The shuttle only
  2. The grab only
  3. The shuttle and launching engine steam pistons
  4. The grab and launching engine steam pistons
- 3-25. During normal launching operations, when will the grab release the shuttle?
1. When endspeer has been reached and the unlocking mechanism is disengaged
  2. When launch complete is reached and the locking mechanism is actuated
  3. When both have returned to battery position and the unlocking mechanism is actuated
  4. When maximum load drag weight is reached and the unlocking mechanism automatically disengages

- 3-26. The fixed sheave assembly, in conjunction with what other component, converts the longitudinal motion of the linear retraction engine into the motion of the cables to operate the grab?
1. The retraction engine control valve
  2. The retract stroke buffer
  3. The accumulator
  4. The crosshead assembly
- 3-27. What drive system component(s) provide(s) a means of adjusting the battery position of the grab on the linear retraction engine?
1. Crosshead
  2. Cable tensioners
  3. Cable equalizers
  4. Adjustable idler sheaves
- 3-28. What component stops the forward motion of the linear retraction engine crosshead?
1. The retraction engine control valve
  2. The retract buffer
  3. The advance buffer
  4. The maneuver forward valve
- 3-29. The advance and retract cycle times of the linear retraction engine are determined by which of the following components?
1. The metering rods
  2. The fixed orifices
  3. The fine adjustment valves
  4. The retraction engine control valve
- 3-30. Which of the following components direct(s) the flow of fluid from the retraction engine hydraulic accumulator to the operating chambers of the linear retraction engine main hydraulic cylinder?
1. The retraction engine control valve
  2. The engine hydraulic blocking valve
  3. Two air-operated solenoid valves
  4. Three main hydraulic pumps
- 3-31. Which of the following conditions would indicate a water loss in the catapult hydraulic fluid?
1. An increase in ph number
  2. A decrease in ph number
  3. An increase in viscosity
  4. A decrease in viscosity
- 3-32. What is the function of the catapult main hydraulic pump delivery control unit?
1. To direct fluid to the gravity tank when the pump is on stroke only
  2. To direct fluid to the accumulator when the pump is off stroke only
  3. To direct fluid to the accumulator when the pump is on stroke and to the gravity tank when the pump is off stroke
  4. To direct fluid to the accumulator when the pump is off stroke and to the gravity tank when the pump is on stroke
- 3-33. The motion of the rotary retraction engine hydraulic motor is transferred to the cable drive system by what assembly?
1. The traverse carriage assembly
  2. The crosshead assembly
  3. The sheave and adapter assembly
  4. The drum assembly
- 3-34. The forward motion of the rotary retraction engine is stopped at the completion of the grab advance cycle by what force or device?
1. By cable dead weight drag
  2. By fluid acting on the carriage assembly
  3. By the advance buffer
  4. By fluid braking of the hydraulic motor

IN ANSWERING QUESTIONS 3-35 THROUGH 3-38, SELECT THE COMPONENT FROM COLUMN B THAT MATCHES THE PURPOSE OF THE ROTARY RETRACTION ENGINE COMPONENT LISTED IN COLUMN A.

	<u>A. PURPOSES</u>	<u>B. COMPONENTS</u>
3-35.	Guides the cables between the engine and the grab	1. Cable tensioner assembly
3-36.	Prevents the cables from becoming crossed and tangled on the drum	2. Screw and traverse carriage assembly
3-37.	Operates hydraulically to keep the retraction engine cables tight	3. Lead sheave assembly 4. Cable tensioner sheave assembly
3-38.	Provides a means of transmitting the force developed by the tensioner to the cable	

3-39.	What is the function of the rotary retraction engine maneuvering valve?	
	1. To protect the engine from damage in the event of a malfunction	
	2. To control the bridle tensioner control valve	
	3. To control the speed of the grab after advance or retract stroke braking has been completed	
	4. To initiate the advance and retract stroke braking	
3-40.	The bridle tensioner fully aft limit switch is part of two catapult electrical circuits. One is the retract permissive circuit. What is the other one?	
	1. The maneuver forward	
	2. The maneuver aft	
	3. The military power	
	4. The suspend circuit	

- 3-41. The C-7 and C-11 catapult control systems differ from the C-13 control system in which of the following ways?
1. They have various circuit breakers, fuses, and panel lights
  2. They have control units that utilize only solenoids and relays
  3. They have control consoles located below the flight deck
  4. They have cam operated pilot valves used in conjunction with the electrical components
- 3-42. A total of how many positions are indicated on the C-7/C-11 catapult control console sequence indicator dial?
1. Five
  2. Six
  3. Seven
  4. Eight

---

IN ANSWERING QUESTIONS 3-43 THROUGH 3-45, SELECT FROM COLUMN B THE COMPONENT OF THE CAM CONTROL UNIT THAT PERFORMS THE FUNCTION LISTED IN COLUMN A.

	<u>A. FUNCTIONS</u>	<u>B. COMPONENTS</u>
3-43.	Drives the main-drive indicator on the sequence indicator dial	1. DC shaft 2. DK shaft
3-44.	Controls the camshafts and the cam control unit	3. Fire solenoid 4. Handcrank
3-45.	Actuates the launch valve pilot valve	
3-46.	Which of the following controls is NOT a momentary contact push button?	
	1. Fire	
	2. Maneuver aft	
	3. Lube	
	4. Maneuver forward	

IN ANSWERING QUESTIONS 3-47 THROUGH 3-49, SELECT FROM COLUMN B THE PANEL THAT INDICATES THE FUNCTION LISTED IN COLUMN A.

<u>A. FUNCTIONS</u>		<u>B. PANELS</u>
3-47.	Indicates pressures and temperatures of various components	1. Emergency panel
3-48.	Used to control normal launching operations	2. Gauge panel
3-49.	Contains all lights, switches, and push buttons that are found on the deckedge panel	3. Operating panel

---

3-50. What panel indicates the catapult readiness to the catapult launching officer during normal operations?

1. The gauge panel
2. The monitor panel
3. The auxiliary deckedge panel
4. The operating panel

3-51. The PRI-FLY control panel indicates to the air officer the condition of readiness of which of the following equipment?

1. Aircraft
2. Recovery equipment
3. Catapults
4. LSO platform

3-52. The controls for the integrated catapult control system (ICCS) are mainly divided between or among how many control stations?

1. Five
2. Two
3. Three
4. Four

3-53. The malfunction and status lights are located on what panel or console of the ICCS?

1. The central panel
2. The cat officer control console
3. The emergency deckedge control console
4. The monitor panel

3-54. The emergency deckedge control panel of the ICCS is operational during which of the following situations?

1. Normal operations only
2. Emergency mode II only
3. Emergency mode I only
4. At all times

---

THE CENTRAL CHARGING PANEL IS DIVIDED INTO FOUR MAIN PANELS, IN ANSWERING QUESTIONS 3-55 THROUGH 3-57, SELECT THE PANEL FROM COLUMN B THAT MATCHES THE FUNCTION PERFORMED IN COLUMN A.

<u>A. FUNCTIONS</u>		<u>B. PANELS</u>
3-55.	Controls and monitors the pneumatic system	1. Left front panel
3-56.	Controls and monitors the hydraulic system	2. Left intermediate front panel
3-57.	Monitors the various functions of the catapult during normal operations	3. Right front panel

---

3-58. The exhaust valve closes in what phase of catapult operation?

1. Final ready
2. Standby
3. First ready
4. Launch complete

3-59. The low pressure air supply is shut off to what control valve during the firing of no-loads?

1. The bridle tension valve
2. The maneuver aft valve
3. The lubrication valve
4. The advance valve

3-60. In addition to the grab being fully advanced, what other condition(s) must exist before the retract permissive light will come on at deckedge?

1. The exhaust valve must be open
2. The deck (bridle) tensioner must be in
3. The retract buffer must be out
4. All of the above

- 3-61. Under normal launching conditions, what should be the last word(s) spoken over the sound powered phones?
1. FIRST READY
  2. TAKING TENSION
  3. FINAL READY
  4. FIRE
- 3-62. What signal is used by the deckedge operator to indicate that the FINAL READY light has come on at the deckedge panel and the catapult is in the FINAL READY condition?
1. Both hands are held open and above the head
  2. One hand is held open and above the head
  3. One hand is held above the head with two fingers extended
  4. Both hands are held above the head with only the index fingers extended
- 3-63. Which of the following actions must the deckedge operator take after receiving the FIRE signal from the catapult officer?
1. Immediately push the FIRE push button
  2. Hesitate for at least 10 seconds to ensure that the aircraft is at full power, then push the FIRE push button
  3. Notify the console operator that he is firing the catapult, then push the FIRE push button
  4. Perform a final safety scan of the flight deck and catwalks, then push the FIRE push button
- 3-64. What immediate action must be taken by the deckedge operator if the catapult officer signals a hangfire?
1. Push the MANEUVER AFT push button to release bridle tension
  2. Tell the console operator to actuate the SUSPEND switch
  3. Close the EMERGENCY cutout valve and then actuate the SUSPEND switch
  4. Actuate the SUSPEND switch and tell the console operator to CLOSE THE EMERGENCY CUTOUT VALVE, CLOSE THE EMERGENCY CUTOUT VALVE
- 3-65. An increase of 10 psi or more above the normal water-brake cylinder inlet elbow pressure would indicate which of the following conditions?
1. A cracked choke ring
  2. A clogged annulus ring
  3. A loose cylinder vane
  4. A damaged striker ring
- 3-66. What component(s) of the water brakes could be damaged if the temperature of the water in the water brake tank is permitted to remain above 180°F during catapult operations?
1. The inlet elbow pressure sensing switches
  2. The steam cutoff pressure switch
  3. The water brake pump inlet strainer
  4. The water brake pump bearings
- 
- QUESTIONS 67 THROUGH 70 APPLY TO THE LAUNCHING PROCEDURES USED WITH THE ICCS .
- 3-67. On ships where the ICCS is the primary mode of controlling catapult launching operations, who depresses the FIRE push button to launch an aircraft?
1. The launching officer
  2. The deckedge operator
  3. The catapult safety observer
  4. The central charging panel operator
- 
- IN ANSWERING QUESTIONS 68 THROUGH 70, SELECT FROM COLUMN B THE PERSONNEL WHOSE RESPONSIBILITIES ARE LISTED IN COLUMN A.
- |       | A. RESPONSIBILITIES                               | B. PERSONNEL  |
|-------|---|---|
| 3-68. | Gives the tension signal to the catapult director | 1. Hookup petty officer only  |
| 3-69. | Signals the launching officer to take tension     | 2. Catapult safety observer only  |
| 3-70. | Signals suspend to the launching officer          | 3. Catapult director only   |
|       |   | 4. Hookup petty officer, catapult safety observer, or catapult director |

3-71. Of the following conditions, which one would be a reason to suspend the catapult at the water brakes during catapult operations?

1. The cylinder elbow pressure is 45 psi
2. Only one pump is operating
3. The cylinder elbow pressure is 63 psi
4. Oil is flowing out of the overflow drain

3-72. Of the following conditions, which one would NOT require replacement of the retraction engine advance and retract cables?

1. More than five broken wires in one rope lay
2. More than 20 broken wires in any 30-foot length
3. The grab is out of ideal position
4. The cables have been in service for 24 months

3-73. A catapult daily work/maintenance logbook should be kept for how long after it has been filled with entries?

1. 1 yr
2. 2 yr
3. 3 yr
4. 5 yr



ASSIGNMENT 4

Textbook Assignment: Associated Launching Equipment," and "The Aircraft Launch and Recovery Equipment Maintenance Program (ALREMP)"; chapters 5 and 6, pages 5-1 through 6-20.

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|---|--|
| <p>4-1. The Mk 7 Mod 0 JBD consists of a total of how many watercooled panels?</p> <ol style="list-style-type: none"><li>1. Six</li><li>2. Two</li><li>3. Eight</li><li>4. Four</li></ol> <p>4-2. A total of how many hydraulic cylinders are used to raise and lower each pair of JBD panels?</p> <ol style="list-style-type: none"><li>1. Six</li><li>2. Two</li><li>3. Eight</li><li>4. Four</li></ol> <p>4-3. The removable module assemblies are attached to the JBD panel assembly by what devices?</p> <ol style="list-style-type: none"><li>1. Welds</li><li>2. Clamps</li><li>3. Edge-fitted brackets</li><li>4. Screws</li></ol> <p>4-4. The JBD cooling water must be maintained at what minimum pressure?</p> <ol style="list-style-type: none"><li>1. 60 psi</li><li>2. 70 psi</li><li>3. 80 psi</li><li>4. 90 psi</li></ol> <p>4-5. The emergency lowering hydraulic bypass lines permit fluid to bypass what component of the JBD hydraulic system?</p> <ol style="list-style-type: none"><li>1. The lowering side of the hydraulic cylinder</li><li>2. The solenoid manual override</li><li>3. The four-way control valves</li><li>4. The gravity tank</li></ol> <p>4-6. What devices control the flow of cooling water through the Mk 7 JBD panel module assemblies?</p> <ol style="list-style-type: none"><li>1. Throttle valves</li><li>2. Vacuum breaker valves</li><li>3. Orifices</li><li>4. Manual hand valves</li></ol> | <p>4-7. Where is the Mk 7 JBD auxiliary control panel located?</p> <ol style="list-style-type: none"><li>1. At deckedge</li><li>2. In the retraction-engine machinery room</li><li>3. In the JBD machinery room</li><li>4. At the catapult main control console</li></ol> <p>4-8. JBD control is transferred from the portable control box to the auxiliary control panel by what switch?</p> <ol style="list-style-type: none"><li>1. A manual override switch</li><li>2. The defeat interlock switch</li><li>3. The portable control box suspend switch</li><li>4. A rotary type switch</li></ol> <p>4-9. In the event of an electrical power failure, how may the Mk 7 JBDs be raised or lowered?</p> <ol style="list-style-type: none"><li>1. By the auxiliary control panel</li><li>2. By the portable control box group UP-DOWN toggle switch</li><li>3. By the manual override on the four-way control valves</li><li>4. By a tow tractor and cable</li></ol> <p>4-10. When it is necessary to remove a component from the hydraulic system, you should cap or plug the open lines to prevent foreign matter contamination.</p> <ol style="list-style-type: none"><li>1. True</li><li>2. False</li></ol> <p>4-11. Which of the following actions can you take to isolate portions of the JBD hydraulic system?</p> <ol style="list-style-type: none"><li>1. Close the shutoff valve between the filter and the main hydraulic pumps</li><li>2. Close the four-way valve manifold shutoff valves</li><li>3. Close the hydraulic cylinder isolation valves</li><li>4. By doing any of the above, as appropriate</li></ol> |
|---|--|

- 4-12. What is/are the advantage(s) of the nose gear launch system over the conventional launch system?
1. It permits positive engagement of the aircraft to the catapult
  2. It minimizes the number of personnel required to be near the aircraft during hookup operations
  3. It permits automatic engagement of the aircraft to the catapult
  4. All of the above
- 4-13. Inserts in the NGL guide track ensure that the aircraft launch bar makes positive contact with which of the following components?
1. The slide
  2. The buffer hook actuator roller
  3. The track seal
  4. The soft-stop buffer
- 4-14. What component of the Mk 2 NGL system engages the aircraft holdback bar as the aircraft taxis into position for launch?
1. The buffer hook
  2. The slide
  3. The launch actuator reset assembly
  4. The buffer cylinder
- 4-15. During NGL operation, when the slide assembly is forward, what device holds the reset-assembly slider above the surface of the guide track deck housing cavity?
1. The slider actuating spring
  2. The actuator assembly
  3. The buffer hook
  4. The shuttle spreader
- 4-16. Which of the following statements best describes the NGL shock absorber assembly?
1. A self-contained, sealed unit that requires no maintenance or adjustments
  2. A hydraulically operated, three-cylinder, buffer unit
  3. A hydraulically operated buffer unit that uses tube orifices to meter fluid flow
  4. A piston-type accumulator energy absorber
- 4-17. What device controls the flow of hydraulic fluid supplied from the catapult hydraulic system to the NGL buffer cylinder?
1. The NGL dump valves
  2. The NGL pilot valve
  3. The NGL valve manifold
  4. The NGL buffer cylinder control valve
- 4-18. What type of maintenance is normally accomplished by the catapult and arresting gear crew members?
1. Standard overhaul
  2. Special overhaul
  3. Intermediate maintenance
  4. Depot maintenance
- 4-19. Maintenance tasks are assigned according to the complexity, scope, and range of the work to be performed.
1. True
  2. False
- 4-20. Which of the following is NOT a function of organizational maintenance?
1. Inspection, operation, and servicing as defined and required by PMS
  2. Corrective and preventive maintenance
  3. Record keeping and report writing
  4. Type III calibration of designated equipment
- 4-21. What maintenance activity performs type III calibration?
1. Organizational maintenance
  2. Intermediate maintenance
  3. Depot maintenance
  4. Navy ASO
- 4-22. What authority sponsors and directs the ALREMP?
1. The Naval Air Systems Command (NAVAIRSYSCOM)
  2. The Chief of Naval Operations (CNO)
  3. Ships Parts Control Center (SPCC)
  4. The Navy Aviation Maintenance Support Office (NAMSOS)

- 4-23. What authority is responsible for the support of research, design, development, testing, acquisition, and logistic support of all catapult and arresting gear materials and associated equipment?
1. The CNO
  2. NAMSOC
  3. The Naval Air Warfare Center (NAWC)
  4. COMNAVAIRSYSCOM
- 4-24. In the V-2 maintenance organization, who has the authority to certify that maintenance actions have been completed and that the equipment can be returned to an operational status?
1. The division officer or maintenance officer
  2. The catapult officer or recovery officer
  3. The maintenance officer or maintenance control chief
  4. The maintenance officer only
- 4-25. Which of the following personnel are responsible for the day-to-day operations of the work center, the nomination of qualified personnel to be collateral duty inspectors, and the assignment of work center personnel to specific maintenance tasks?
1. The maintenance officer, work center group supervisors, and work center supervisors
  2. Work center group supervisors and work center supervisors only
  3. Work center group supervisors, the QA work center supervisor, and the maintenance support work center supervisor
  4. The maintenance officer, the maintenance control chief, and work center group supervisors
- 4-26. Which of the following VIDS boards provides information pertaining to the divisions's overall maintenance status?
1. The maintenance support work center board
  2. The Quality Assurance work center board
  3. The maintenance control work center board
  4. The material control work center board
- 4-27. A total of how many information display columns are required on both the maintenance control and all other work center VIDS boards?
1. Seven
  2. Six
  3. Five
  4. Four
- 4-28. For what reason(s) must a casualty report (CASREP) be submitted for jobs that are displayed in either the AWM or AWP columns of a VIDS board?
1. To report that maintenance cannot be performed or completed due to operational commitments or time restraints
  2. To report that maintenance or repair cannot be made or completed due to a lack of maintenance capability or non-availability of parts or material
  3. To report that maintenance has been completed and inspected and that only a functional test remains to be performed
  4. To report that all division maintenance has been completed and that all equipment is operational
- 4-29. What color is used to indicate limited capability on the Maintenance Action Form (MAF) cards?
1. Blue
  2. Red
  3. Black
  4. Yellow
- 4-30. On the MAF card, what color is used to indicate the equipment is out of commission?
1. Yellow
  2. Red
  3. Black
  4. Blue

- 4-31. The priority section of the MAF card can be color coded to indicate the maintenance status and operational capability of specific equipment. What status is indicated if no color code is used in the priority section?
1. The equipment is out of commission
  2. The equipment may be used, but has only limited capability
  3. The maintenance is routine and does not affect equipment capability
  4. The maintenance has been completed and the equipment only needs a functional check to be returned to full operational capability
- 4-32. On the MAF card, what color is used for a completed maintenance action awaiting a functional check?
1. Blue
  2. Red
  3. Black
  4. Yellow

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IN ANSWERING QUESTIONS 4-33 THROUGH 4-36, SELECT FROM COLUMN B THE SECTION OF THE ALRE MAINTENANCE ACTION FORM THAT WOULD CONTAIN THE INFORMATION LISTED IN COLUMN A.

	<u>A. INFORMATION</u>	<u>B. SECTIONS</u>
4-33.	Used to document tool control procedures	1. Section I 2. Section III
4-34.	Contains equipment identification information including the equipment noun name and equipment identification code	3. Section VII 4. Section VIII
4-35.	Contains the job start and stop dates	
4-36.	Contains information concerning the usage of parts or material	

- 4-37. What copy, if any, of the completed ALRE MAF is retained by the maintenance responsible work center?
1. One
  2. Two
  3. Three
  4. None
- 4-38. Who is responsible for updating and maintaining the work center maintenance requirement status board?
1. The maintenance control chief
  2. The work center group supervisor
  3. The maintenance control officer
  4. The work center supervisor
- 4-39. What is the primary role of the V-2 maintenance support branch?
1. To manage the division tool control program
  2. To provide technical expertise to operating work centers
  3. To reduce man-hours required to complete maintenance tasks
  4. To manage the division man-hour accounting program
- 4-40. When the Maintenance Support (MS) branch assigns personnel to assist in maintenance performed by the operating work center, who documents the MS man-hours?
1. Maintenance Control
  2. Maintenance Support
  3. The QA branch
  4. The operating work center
- 4-41. The tool control program was established to reduce the potential of tool-related foreign object damage and to reduce the cost of tool replacement.
1. True
  2. False
- 4-42. Which of the following is NOT a benefit of the tool control program?
1. Reduced tool replacement costs
  2. Reduced equipment failures
  3. Reduced tool pilferage
  4. Assurance of tool availability to perform maintenance

- 4-43. Detailed information concerning the ALRE TCP can be found in what publication?
1. NAEC Miscellaneous Report 51/OR732
  2. NAEC Report No. CD-1025
  3. NAVAIR 80R-14
  4. OPNAVINST 4790.4B
- 4-44. The achievement of a properly functioning quality assurance program exhibits which of the following characteristics?
1. The program is managed by the maintenance control officer, maintenance control chief, and work center group supervisors
  2. Eliminates unnecessary man-hour and dollar expenses
  3. Uses prevention, knowledge, and special skills
  4. Stresses the gathering and maintaining of information on quality assurance
- 4-45. What is the basis of maintenance and operational decisions through the Quality Assurance (QA) program?
1. Memory
  2. Intuition
  3. Factual data
  4. The maintenance officer's experience
- 4-46. When it is necessary to augment the QA branch with Collateral Duty QA inspectors (CDQAIS) for more than 90 days, who must approve the continued augmentation?
1. The maintenance officer
  2. The division officer
  3. The commanding officer
  4. The type commander
- 4-47. Who is most directly concerned with, and responsible for, quality in workmanship?
1. The maintenance officer
  2. The assigned quality assurance inspector
  3. The work center supervisor
  4. The equipment operator
- 4-48. When it becomes necessary to augment the quality assurance branch with CDQAIs, they must be designated in writing by which of the following officers?
1. The commanding officer
  2. The air department officer
  3. The V-2 division officer
  4. The V-2 maintenance officer
- 4-49. CDIs are designated in writing by which of the following officers?
1. The air department officer
  2. The executive officer
  3. The commanding officer
  4. The maintenance officer
- 4-50. How often are work center audits conducted?
1. Weekly
  2. Monthly
  3. Quarterly
  4. Semi-annually
- 4-51. Which of the following duties is NOT a responsibility of the quality assurance branch?
1. To prepare maintenance instructions
  2. To provide technical assistance to collateral duty inspectors
  3. To manage the dispersed technical publications libraries
  4. To develop audit checklists
- 4-52. What type of audit is conducted to evaluate a specific maintenance task?
1. Work center audit
  2. Special audit
  3. Internal audit
  4. Type commander audit
- 4-53. The quality assurance branch uses special audits for which of the following reasons?
1. To evaluate the overall quality of performance of each work center
  2. To evaluate tool control program compliance
  3. To monitor programs specifically assigned to the QA branch for monitoring
  4. To establish follow-up procedures to ensure that previous audit discrepancies have been corrected



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CITY, STATE \_\_\_\_\_ ZIP CODE \_\_\_\_\_

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PENSACOLA FL 32509-5237

Subj: AVIATION BOATSWAIN'S MATE E 3&2, NAVEDTRA 82360-A

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☐ USN ☐ USNR ☐ ACTIVE ☐ INACTIVE OTHER (Specify) \_\_\_\_\_ DATE MAILED \_\_\_\_\_

SCORE

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